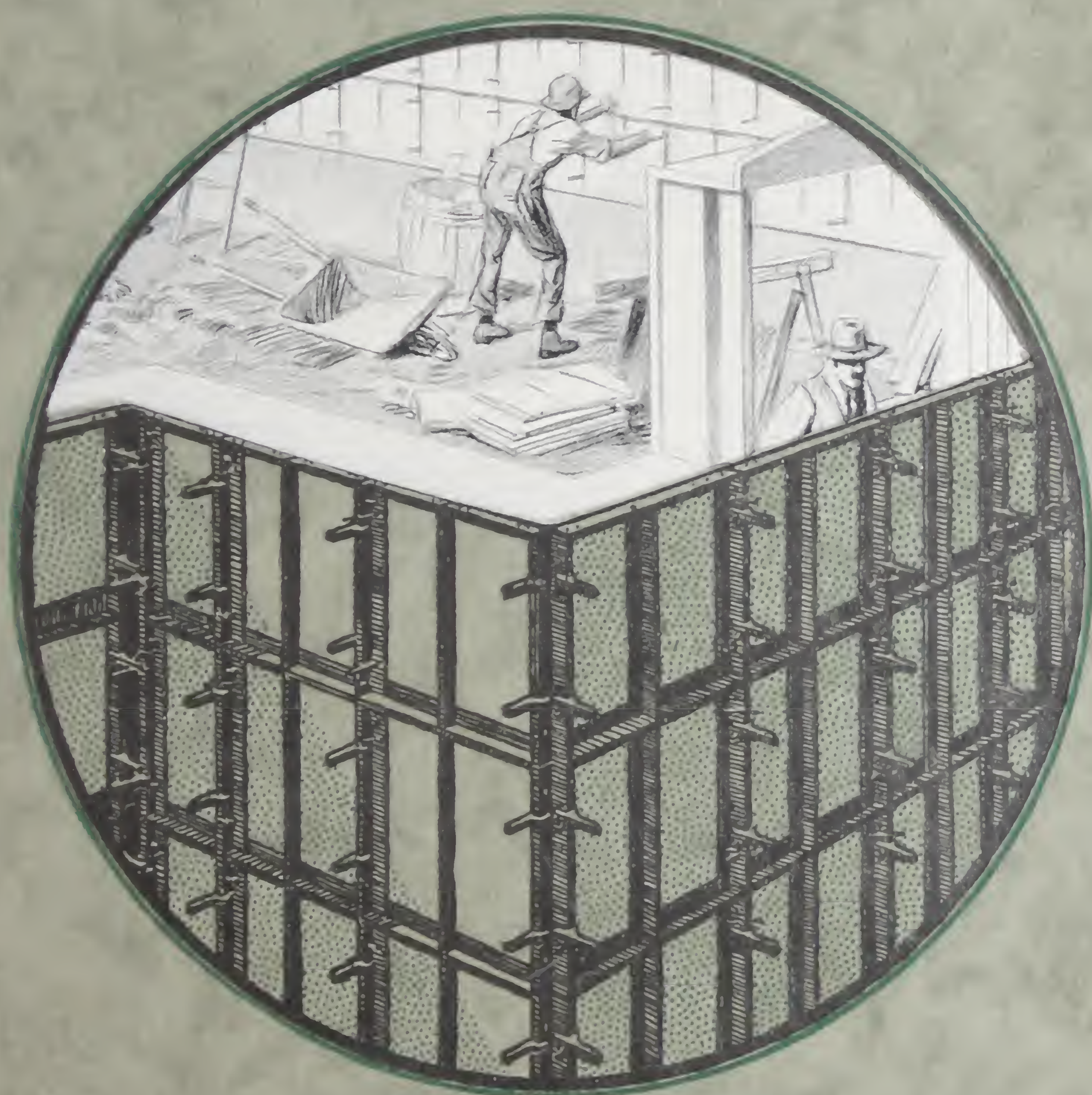


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Metaform

Interlocking Steel Forms
for Monolithic
Concrete Work



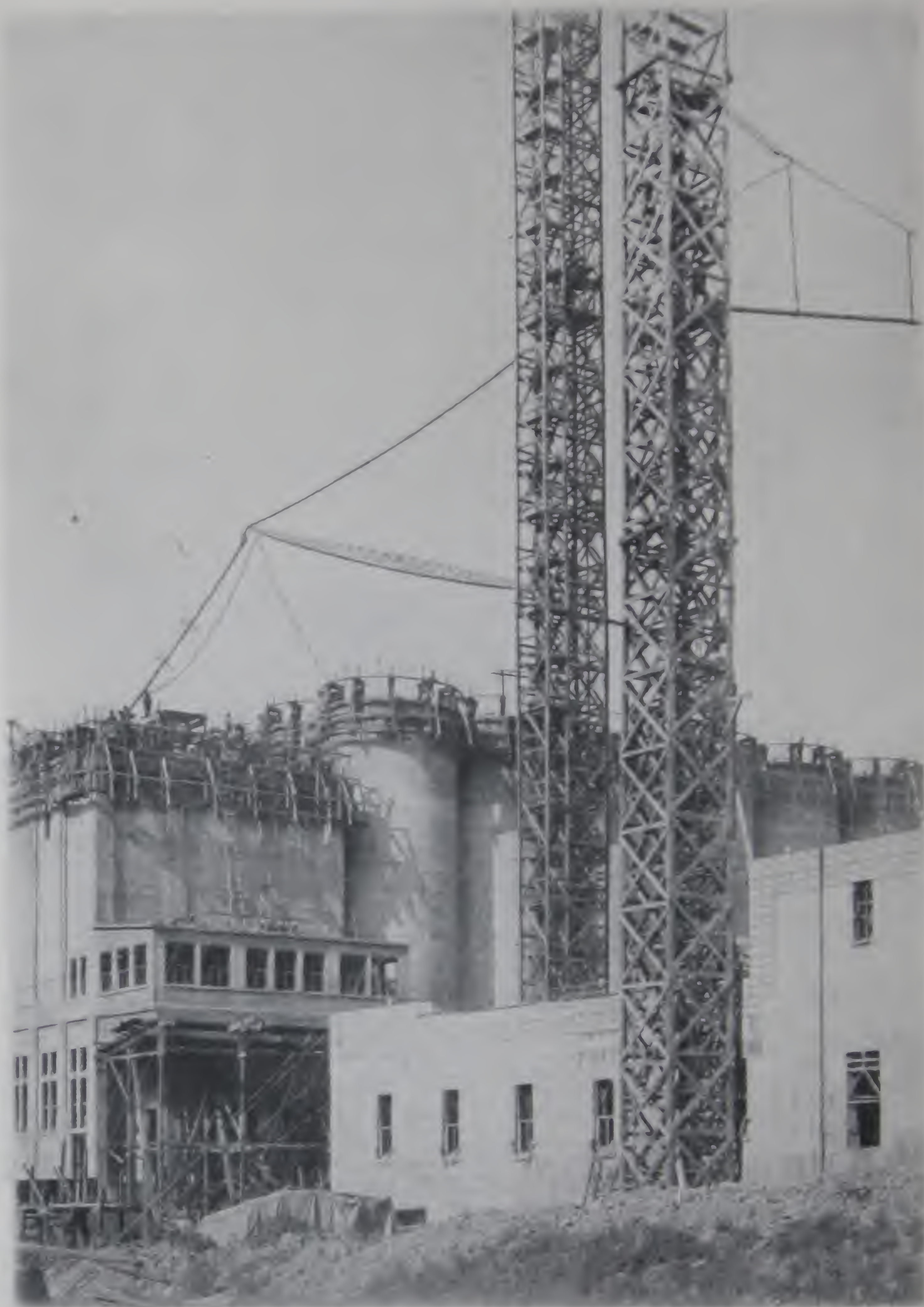
Metal Forms Corporation
Milwaukee, Wisconsin, U.S.A.



Metaform



Metal Forms Corporation
Milwaukee, Wisconsin, U.S.A.



Metaforms decidedly on the job where speed,
accuracy and versatility were essential

Metaform Outfits



Solve the Question of Concrete Forms

STANDARD building practice has shown that in erecting concrete by means of wood forms, approximately three board feet of lumber are required for every square foot of concrete wall surface put in place. Props, shoring and braces consume a large amount of this; the rest goes into the form proper. Skilled carpentry is required in the erection of wood forms, yet the product of this skill must be completely destroyed when the job is finished. And of the lumber employed at least twenty-five percent is rendered useless for further construction work.

This double wastage of labor and material is a tremendous handicap. With the present high price of lumber and of skilled carpenter labor, it is often a serious question in many cases whether concrete, when poured in wood forms, can compete with even the more expensive and less desirable building materials.

A complete answer is found in the Metaform patented system of standardized, interlocking, everlasting metal forms for all concrete construction.

Metaforms may be erected in hours where it would take days to erect wood forms. They are put in place by low-priced common labor instead of high-priced skilled labor. They require no cluttering, work-obstructing maze of props and braces. They allow the contractor to start pouring concrete sooner. They turn out more exact work and better finished surfaces, and instead of the 25% wastage of lumber that wood forms entail, Metaforms may be used again and again without affecting their utility.



The Simple, Strong Units

METAFORMS are built on the interchangeable unit idea. Individual units or sheets of metal of an easily handled size are quickly and rigidly interlocked to make one smooth, continuous form. By combining units of different sizes, the form is made readily adjustable to the varying specifications of concrete walls.

The secret of the great utility, adaptability and economy of the Metaform System lies in the extreme simplicity of the individual unit. Each unit locks strongly to its neighboring units by an operation so elementary that it may be conducted by the most ordinary of unskilled laborers. There are no wedges, clamps, bolts, turn buckles, or other separate parts to be applied. Each unit is self-contained and has attached to it two clamps which, by a single movement of the hand, lock it rigidly into the form.

Alignment of plate to plate is automatically governed by stout dowel pins. Stay rods or spreaders assure proper spacing between molds. After the first course is set and leveled, the wall may be carried upward in perfect plumb and alignment without a single wave or variation in thickness, to any height desired. The absolute accuracy of the separate units, their perfect fit one to the other, and the automatic alignment principle, taken together, effect a remarkable saving of time, labor and watchfulness.

Every reason that tells you to use a machine mixer for your concrete instead of the old-fashioned shovel-and-hoe process, tells you to abandon

slow, clumsy, wasteful, expensive wood form construction methods and replace them by the speedy, universal, easily handled, economical Metaform System.

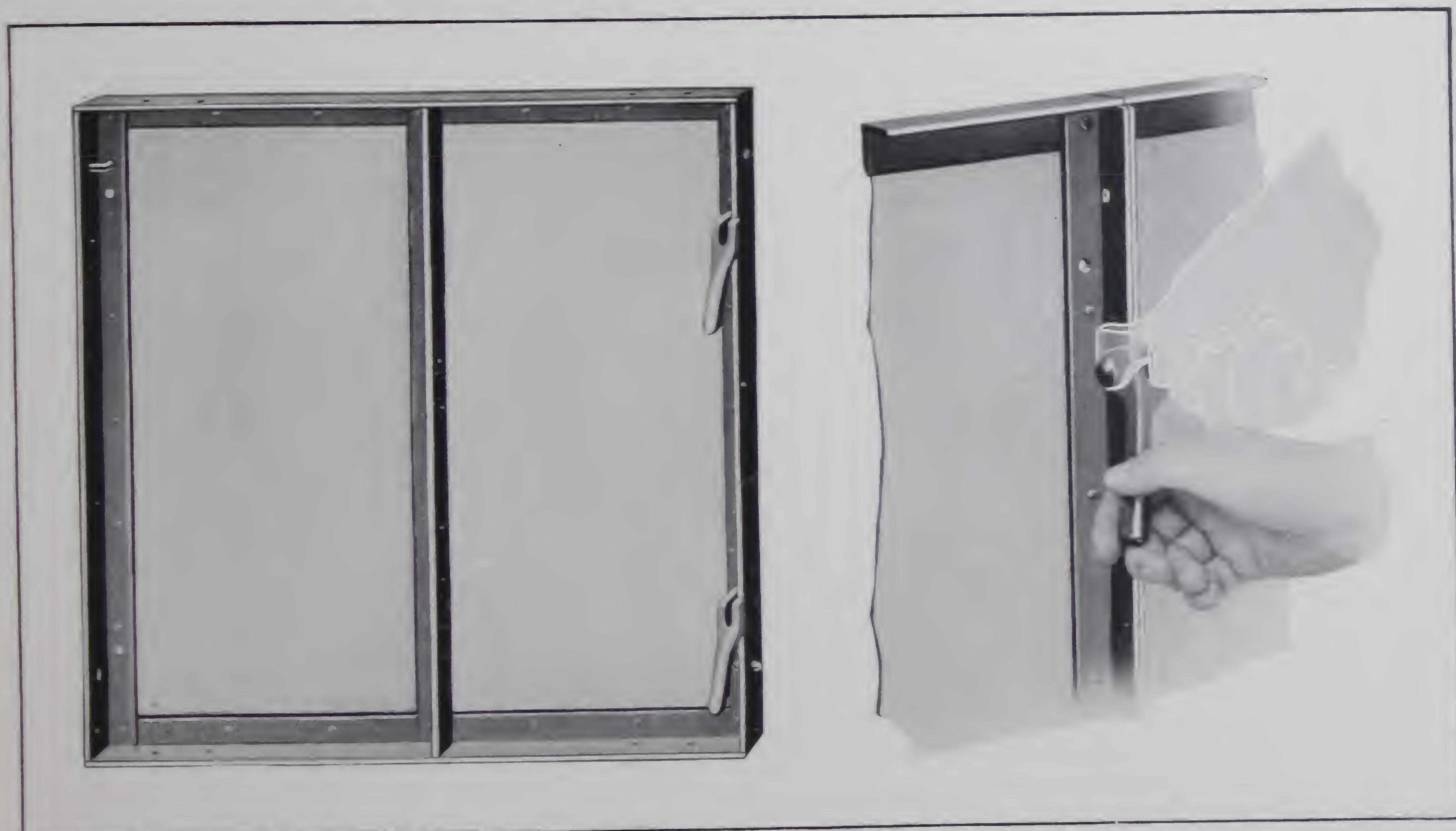
Big jobs or little—a cottage foundation wall or a building project covering many acres—Metaforms save time, material and labor on them all.

The Standard Unit

The standard Metaform unit is a square of smooth, 16 gauge sheet metal, 24" x 24" in size. This sheet is stiffened and held in shape by a frame of 1" x 1" angle iron around its edges and an angle iron brace across the center. In the rim of the frame are set the dowel pins which align it in the form and fastened to one side of it are the two clamps used to lock it into place.

The Clamps

These clamps are in themselves a remarkably efficient piece of mechanism. They are made in one piece of tough malleable metal and, when not in use, lie flat inside of the rim, and out of the way. When the unit is set in place, a single upward push on each of the two clamps locks it firmly to its neighbor. A reverse movement unlocks it. Neither for tightening or holding are there used any loose wedges or pins, nor any other separate or losable tools or parts. There are no special tools needed to operate the clamps, no levers, crowbars or wrenches. A tap or two with a hammer is all that is ever necessary.



Standard Unit

How the Clamp works

Metaform

In addition to the standard 24'' x 24'' units there are really only two other parts to the Metaform System. These consist of the corner connections and the various fractional units, so that the forms may be made to any exact length.

The Fractional Units

The fractional units are built to the standard 24'' x 24'' unit except that they come in different widths. Thirteen sizes are required:

2''x24''	5''x24''	10''x24''	16''x24''	22''x24''
3''x24''	6''x24''	12''x24''	18''x24''	
4''x24''	8''x24''	14''x24''	20''x24''	

There is also a special adjustable unit by which any fraction of an inch may be obtained. By adding one or more of these fractions to a form made up of the standard units, any desired length of wall can be erected. A typical fractional unit is shown below at the right of the regular standard unit, and on the opposite page is shown the adjustable unit.

Corner Connections

There are three styles of corner connections—the Inside and Outside Right Angle Connections and the Hinged Connections with which obtuse angles of any desired degree can be obtained on both the inside and the outside of the wall. These corner units are self-aligning and contain their own locking mechanism, the same as the straight units. Their simple



Standard Unit

Fractional Unit

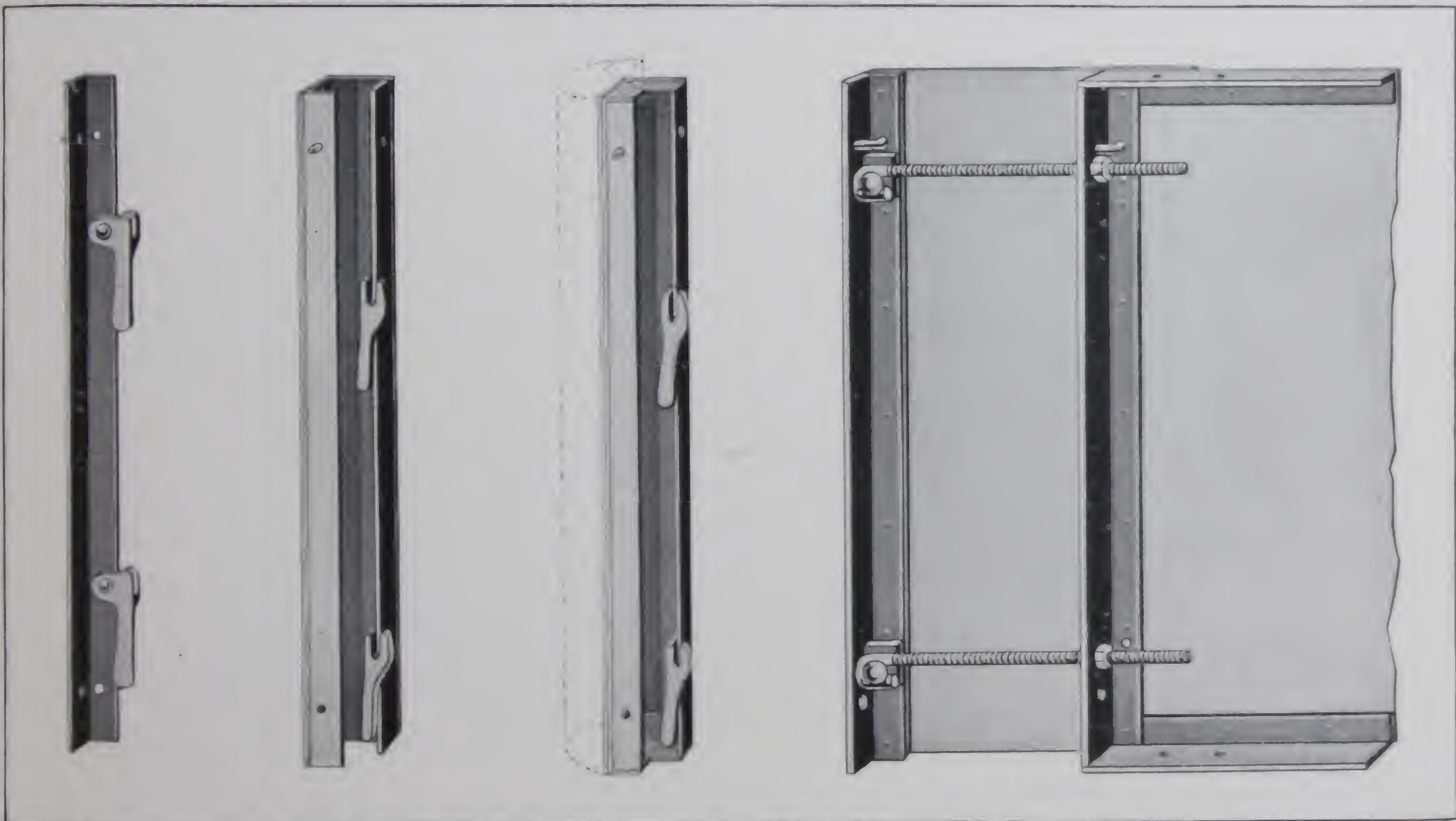
construction is illustrated in detail on the next page of this book and on pages 8 and 9 are illustrations of typical set-ups, showing their use and application.

Thorough Standardization

ALL Metaform units are standardized. Units made ten years ago may be locked up with units made today and they will fit and align perfectly. The first Metaform System was placed in operation in 1905 and practically no change has been made in construction or principle in all that time. About the only deviation has been to change the supporting brace across the standard unit to vertical instead of horizontal. It is shown in its older form in several of our illustrations.

If the original outfit of 1905 had never received an extra part it could be expanded today by the addition of plates being made right now. This is due to the extreme accuracy of construction. Each piece of metal is cut and squared directly to gauge. Every rivet hole, every dowel pin socket is put in exactly the correct place and tested to gauge. It is by reason of this accuracy that concrete construction is so greatly simplified by the Metaform system. After the first course of forms is set up and leveled, common laborers can carry the walls up with minimum supervision.

The thorough standardization of Metaform parts not only permits their duplication at any time but makes the System extremely flexible by



Outside and Inside Corners and Hinged Sections

Adjustable Unit

Metaform

reason of their easy interchangeability. For instance, should an 18-inch unit be desired, a 12 and a 6 inch unit can be used together in its place. No inflexible, hard-and-fast rules complicate the erection of Metaforms.

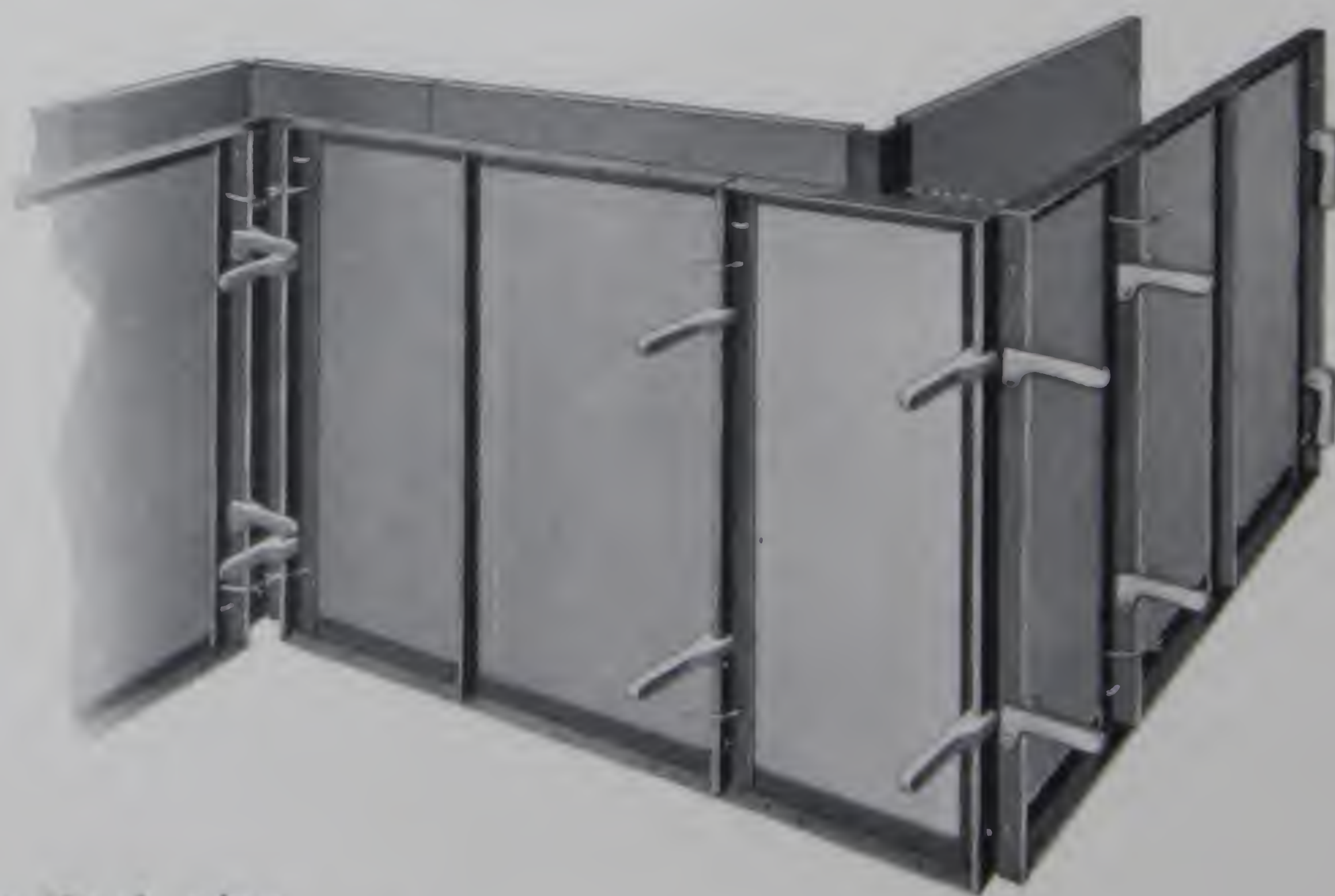
Easy to Lay Out

ONE great time-saving facility offered by Metaform methods is that the proper combination of units to cast any particular wall may be laid out in advance instead of at the job itself, as is so necessary with the cut-and-try methods of wood form construction.

The proper sizes and number of units required to set up the forms may be indicated right on the drawings with surprisingly little effort. The method of figuring what units to employ to build a wall of any particular length, thickness or design, is so simple that anyone can learn how to do it in a few minutes.

With the units selected in advance there is no useless carrying to and from the job of parts that are not needed. Saved cartage alone gives Metaforms a distinct advantage over wood forms. An entire Metaform outfit for running up any ordinary residence foundation will make only a single truckload.

The foreman, when he arrives on the job, picks out the various units as designated on the drawings, and has the first course set up in proper order on the footings. After the first course has been plumbed and leveled, the



Typical Set-Up showing
Corners and Fractionals in use

laborers themselves can select the units for the succeeding courses as they are an exact repetition of the first course. Mistakes are practically impossible. Every part is so simple, so self-aligning, so foolproof, that the men can work at high speed with a very minimum of supervision.

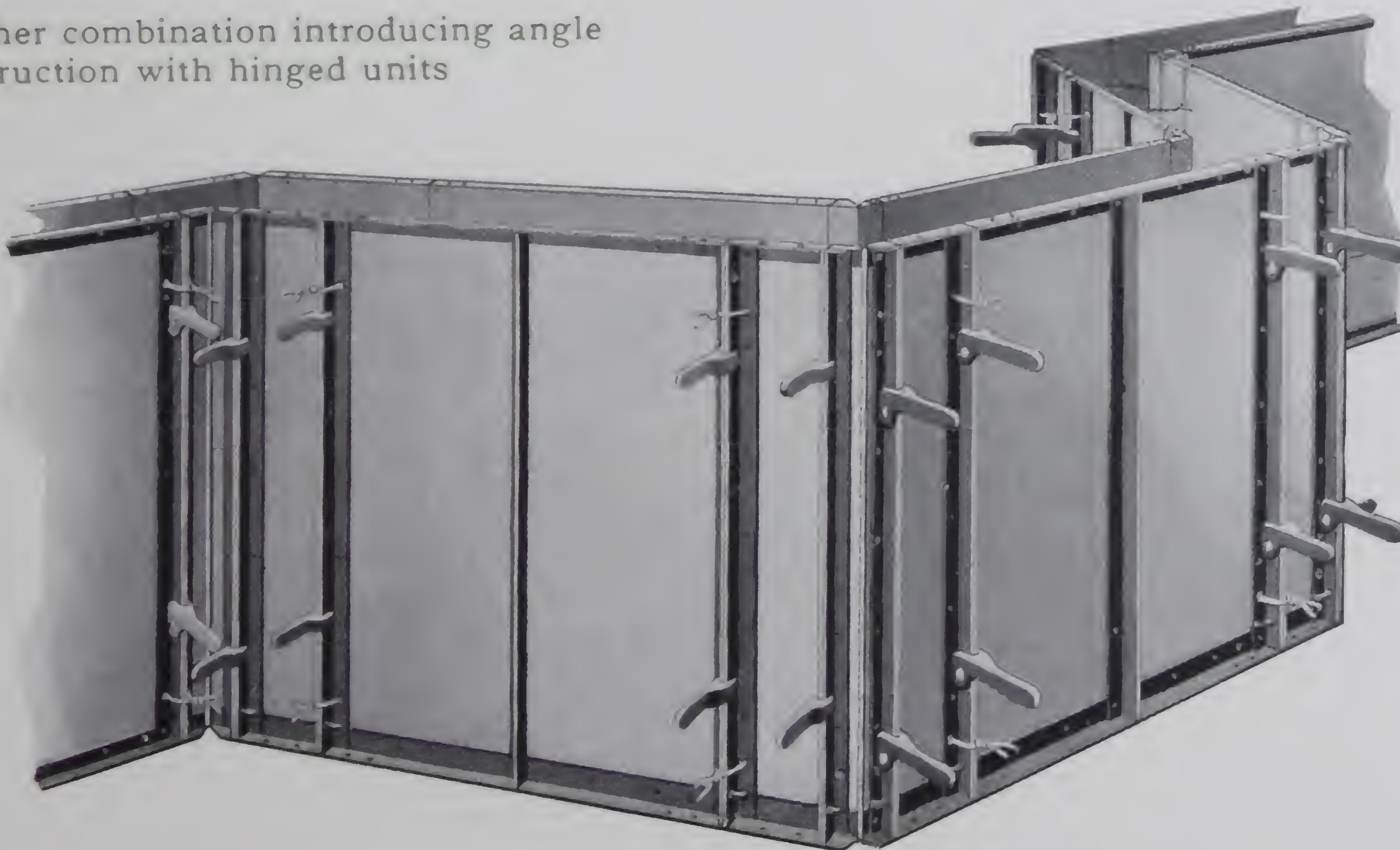
The location of the doors and windows does not affect the selection of mold units. The frames are dropped into the form at the proper places and the wall cast around them, the forms continuing right across the opening, as illustrated on the next and other pages.

The total lack of obstructive bracing when Metaforms are used, adds greatly to the working room around the wall and the ease with which the concrete itself may be brought up and handled. The inside of a Metaform set-up is likewise perfectly clear so that there is nothing to interfere with the placing of reinforcing rods.

Small Equipment Required

THE amount of equipment needed to build a wall with Metaforms is always a surprise to contractors accustomed to using wood, where practically the entire form, with all its shoring and bracing must be left in place until all the concrete is poured. Not more than three courses of Metaform units are necessary to do continuous pouring all around. In fact, two courses are frequently used. After the first course is set and poured, the second course, which is an exact dupli-

Another combination introducing angle construction with hinged units



Metaform



These two views of the same job, admirably bring out the working principle of Metaforms — how they are lapped on ahead of the pouring, employing in this case, only two tiers or courses. These pictures sharply emphasize the very small equipment required for advantageous work.

cate of the first, is set up on top of it and filled. A third course can then be set up and filled in a similar manner.

In ordinary weather, and using good concrete, the first and second courses of forms can be taken off next day and rebuilt on top of the last course, which is left in place each time to act as a support and gauge for the next course. The molds are quickly unlocked, shifted ahead of the pouring, relocked and the operation repeated till the completion of the wall. The placing and removal of Metaform units is so simple that the forms go up continuously as fast as the concrete can be poured. Walls have been run up a hundred feet in this manner, absolutely plumb and free from all waves and irregularities.

Metaforms Insure Speed

WHEN "time is the essence of the contract," or whenever quick action is demanded, no known system ever compared with Metaforms for concrete construction.

Four workmen can set up and wire the first course of molds for 150 lineal feet of wall in two hours. This done, and the line established, the builder can start his mixer. Two men can then set up and wire the other courses faster than the average mixer can turn out concrete to fill them.

The Metaform quick locking device enables one man to set up more square feet of mold than can be erected by any other known means. Here is an illustration of its rapidity.

The footing of a residence foundation 28'-0" x 50'-0" was laid on a Monday afternoon. Tuesday morning eight men started on the foundation proper, and by quitting time the same day the entire foundation, with windows in place, was raised eight feet. The molds were set up and filled using a 9' machine. The next morning the molds were removed and at noon of that day another foundation started. Sixteen carpenters



A panel job, speeded and simplified by Metaforms

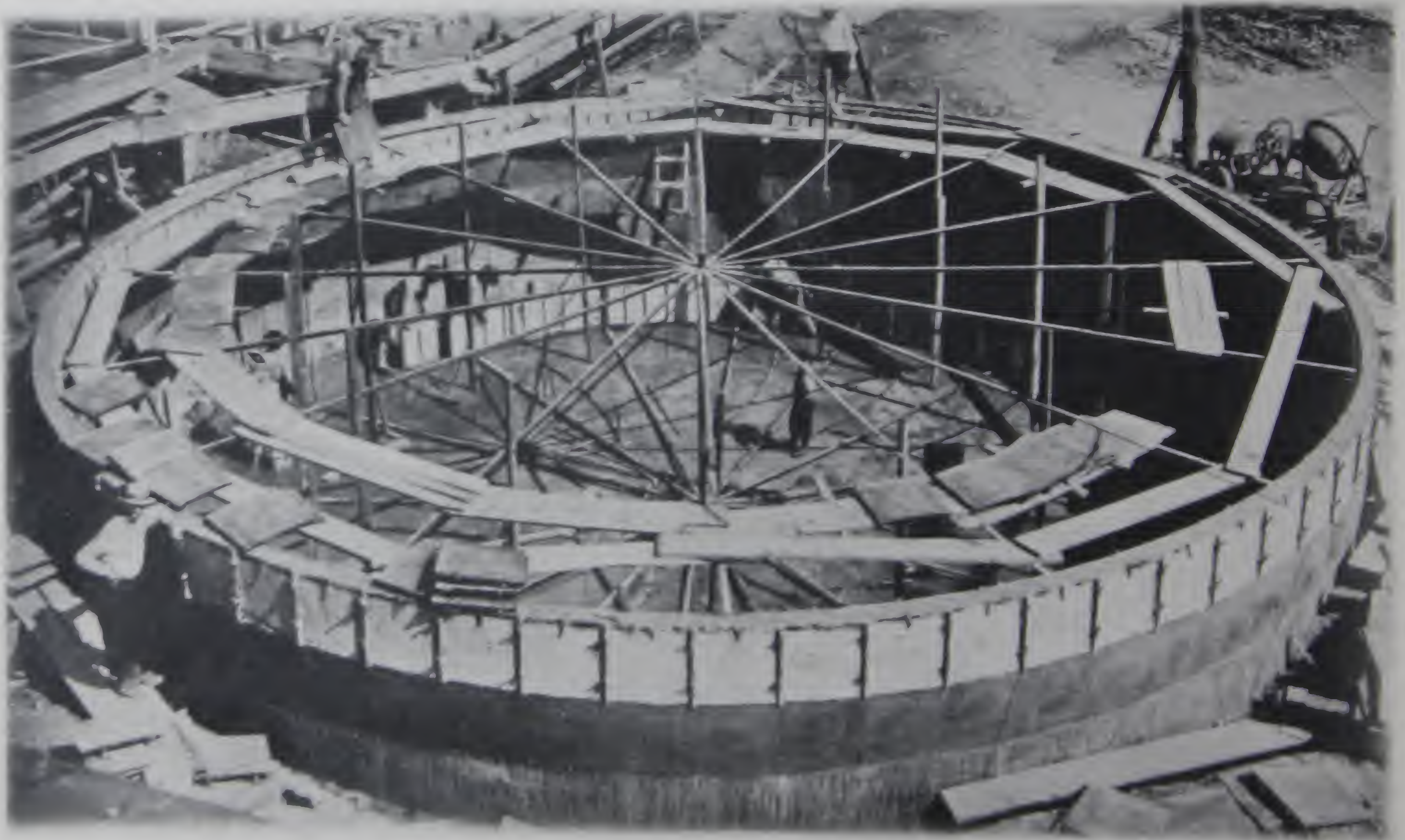
Metaform

would be needed merely to erect wood forms for this job in the same time it required to complete the whole job, including taking down molds. The wood would be practically a total waste, but the Metaforms were just as good as when first erected. They can be used not only once, but hundreds of times and still be in perfect condition.

A Metaform outfit may be used to cast monolithic concrete walls of any length or thickness. No spreading is possible with Metaforms. If a ten-inch wall is specified, they will make a wall exactly ten inches thick from base to top. They make straight walls where straight walls are desired—not a wall varying in thickness anywhere from one-half inch to two inches, as is frequently the case with wooden forms. Better and quicker work can be done with them because a wetter mixture can be used. With wood forms, when a wet, easily poured mixture is used, the cream of the mixture—the cement in solution—frequently drains off through the cracks between the boards. Metaforms allow none to escape and give a smooth, clear finish to the concrete that counts much for appearance and satisfaction.

For All Classes of Work

THE Metaform idea has been extended to apply to round work and round tapered work, as well as straight work. For this class of construction there have been designed special flexible units, as strong and simple as the regular straight units. By means of these flexible units,



The Metaform idea on a big circular job



Representative examples of ordinary
straight wall work handled by Metaforms



Metaform

circularly curved walls of any diameter may be constructed as easily as straight walls. Silos, chimneys, grain elevators, coal pockets and similar round work go up with a speed and perfection that is astonishing to those accustomed to using the cumbersome wood molds that must otherwise be specially built for each job of this class. The walls may be either straight or tapered. Chutes, doorways, windows, etc., present no difficulties. Metaform outfits for round work are described in a separate booklet.

Summing It Up

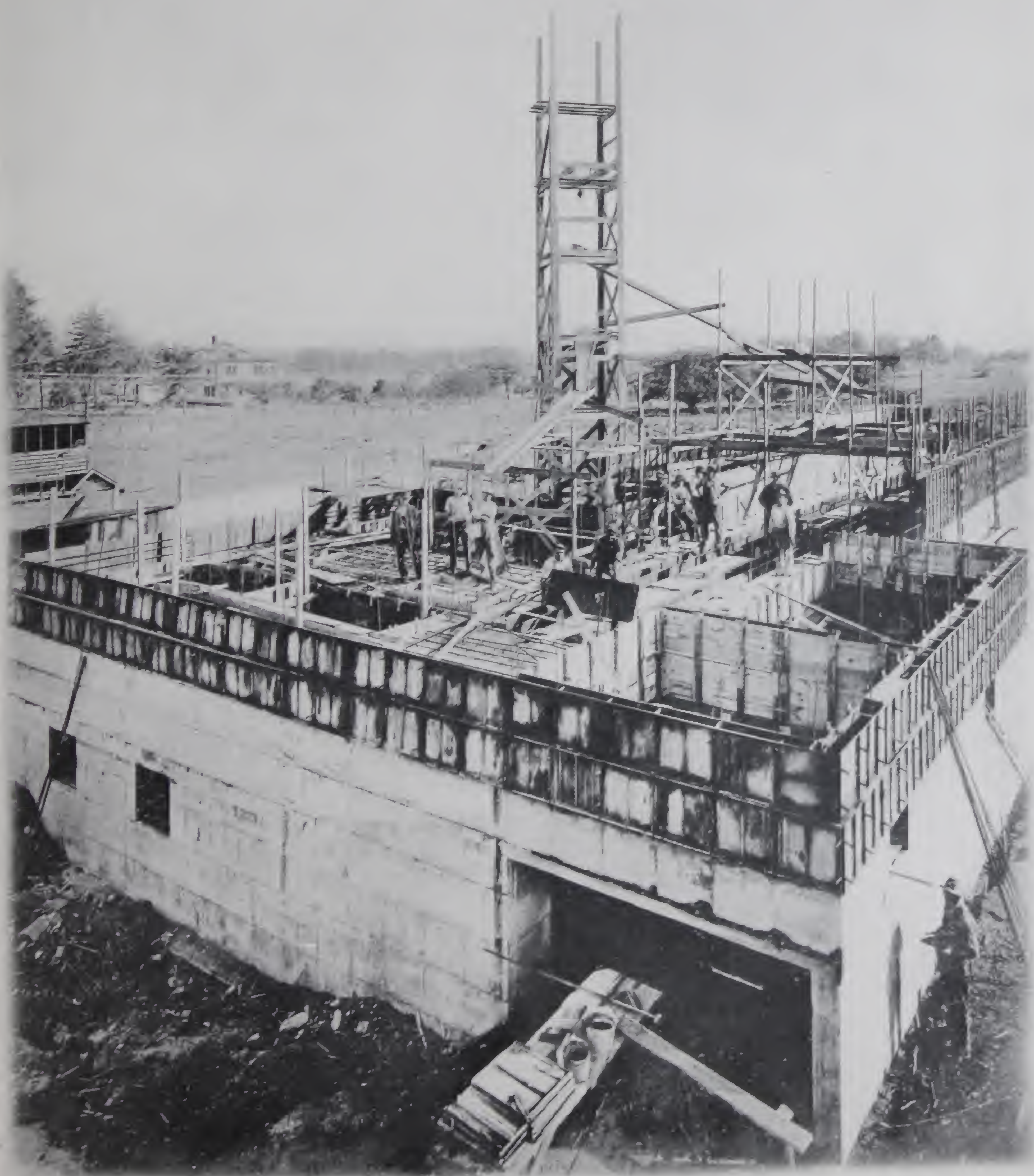
A METAFORM outfit is permanent equipment in the widest application of the term. It will earn its first cost in less than a single season, and may be used over and over again for years and years. As the units are absolutely standard, the outfit may be expanded by the purchase of additional pieces at any time with perfect assurance that they will fit those already in use. Each unit is so strong, so simple, that the care required to keep it in order is practically nothing. Before the concrete is poured into the mold, the face of each plate should be brushed over with some cheap crude oil. This will prevent the cement from sticking to the metal and leaves a smooth, perfect surface when the plates are lifted away. Any cement that does happen to stick to the plates is scrubbed off with a wire brush each time.

Beyond this oiling and the occasional scrubbing off of small patches of cement, Metaforms require no special care or attention. They will remain absolutely square and true for years. Repairs amount to practically nothing. Breakages are almost impossible.

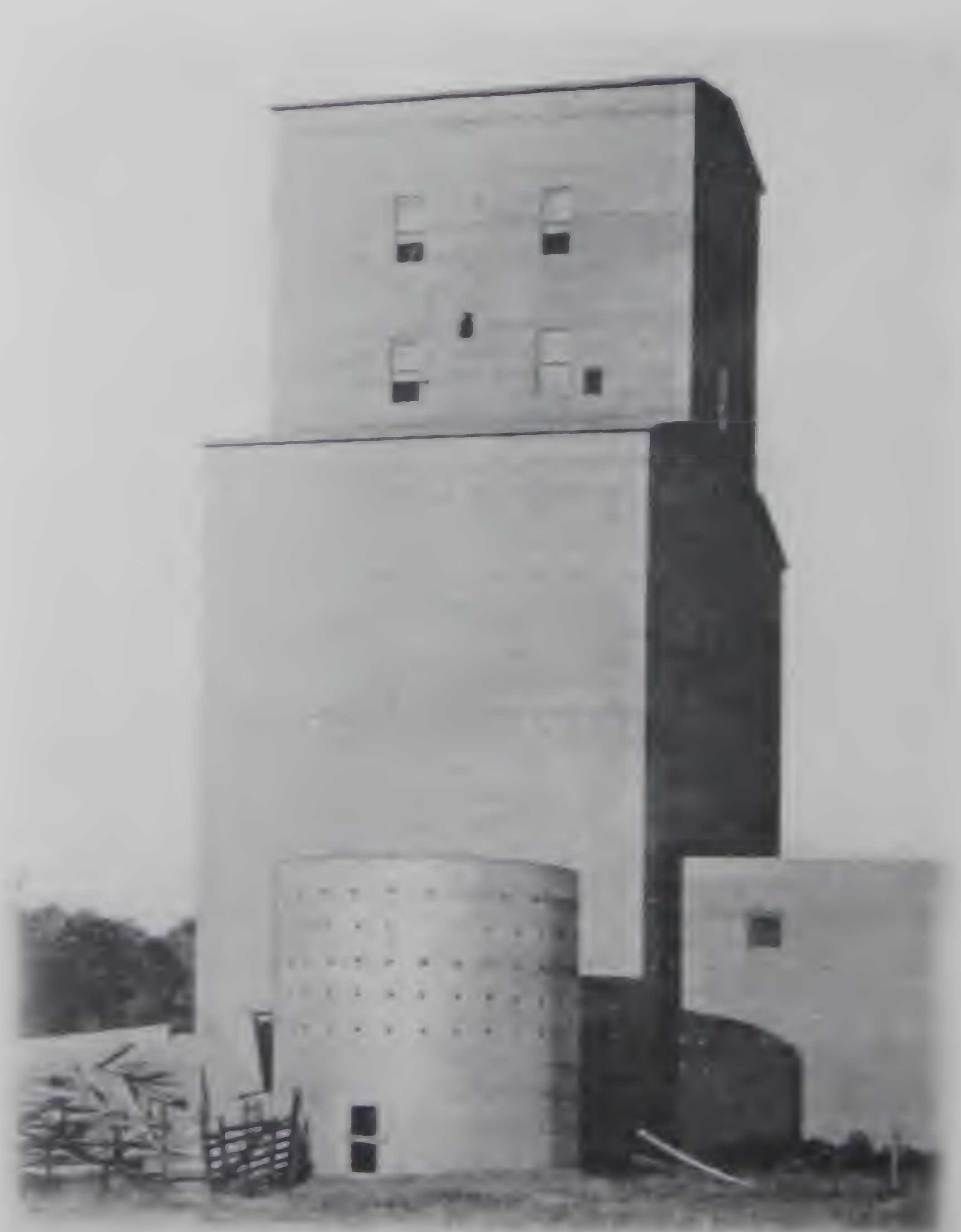
Metaform equipment is the sure sign of a progressive building contractor today—a contractor who can do more work in the same time, do it better and make bigger profits out of it than the man who still sticks to the out-dated system of wood form construction.



A Picture Story for Builders

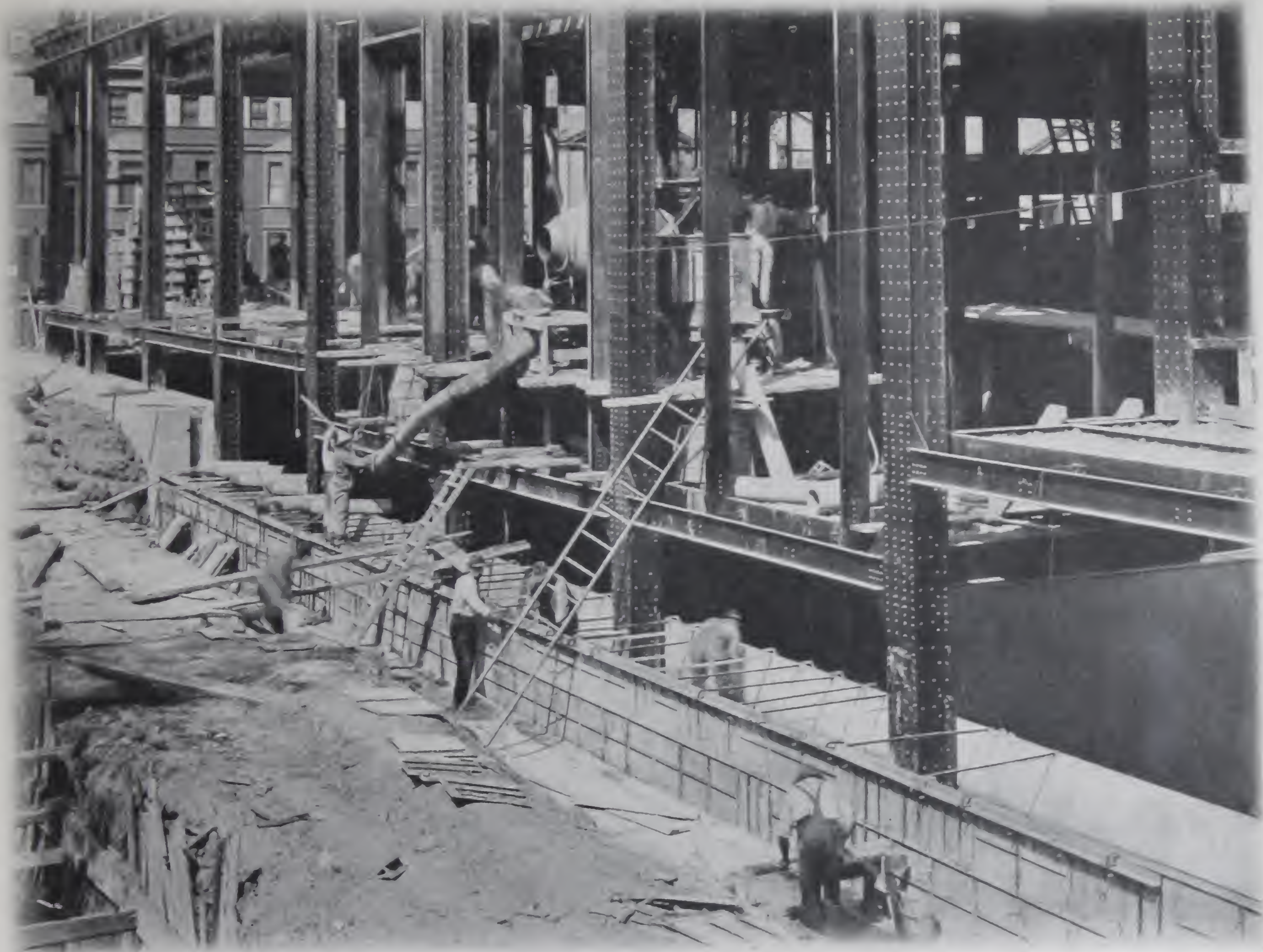


Metaform

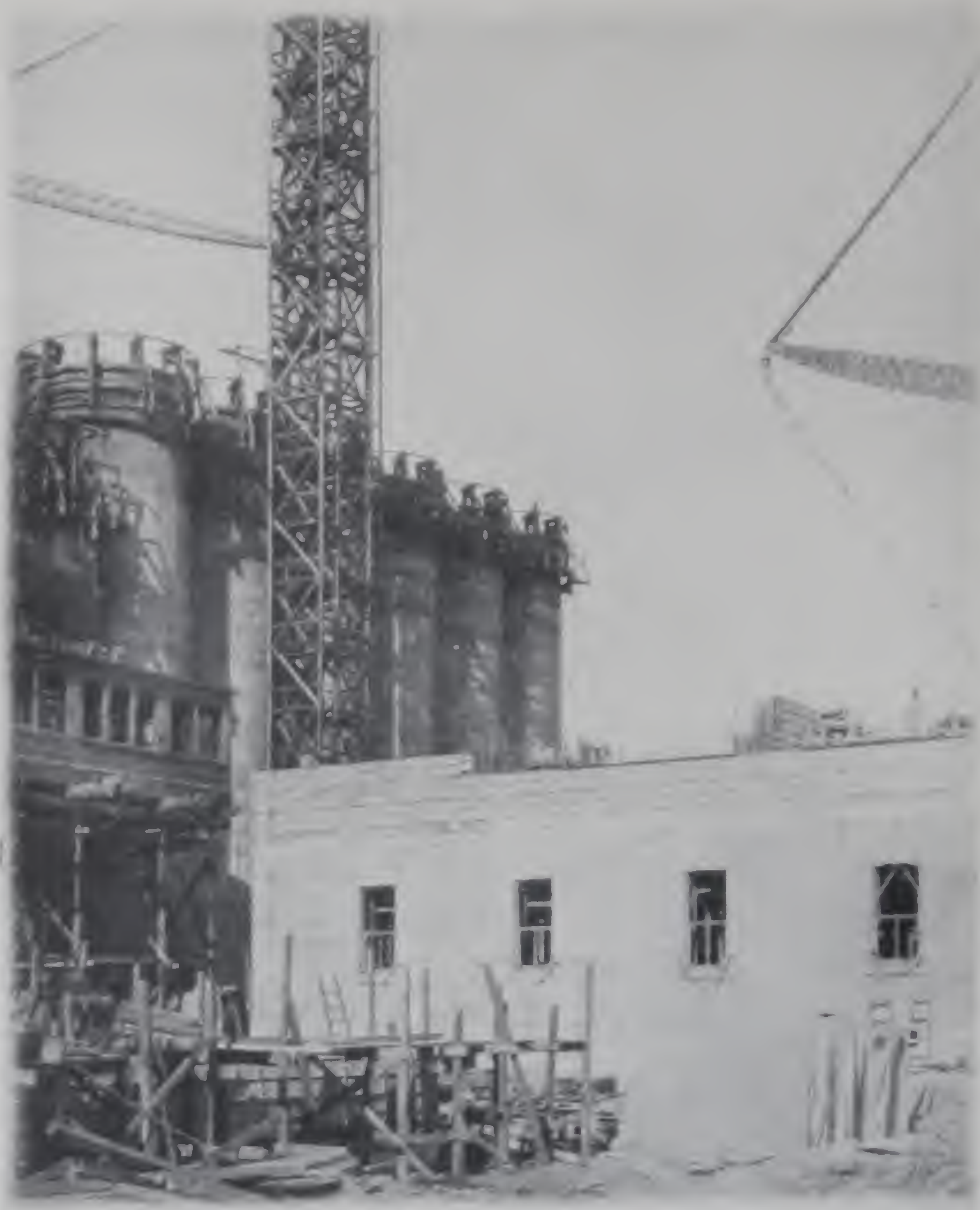


Showing the wide range of Metaform utility — from residences and stores to complete elevators and sky-scraper foundation.





Metaform



Big work and little all look alike to the alert contractor equipped with Metaforms.

One sizable outfit takes care of the large factory job and splits up for a half a dozen smaller contracts when the call comes.

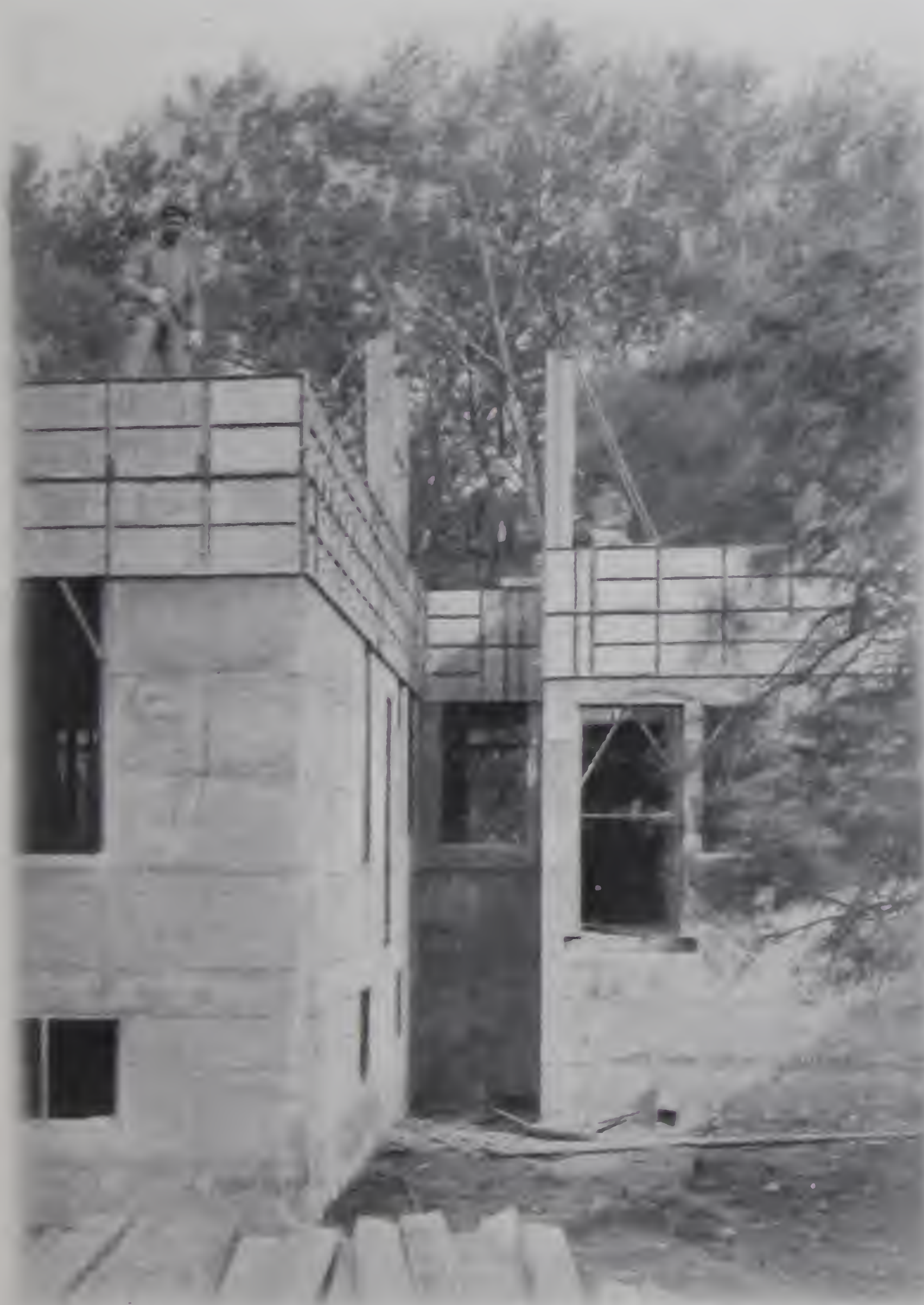
It expands or shrinks at will without loss, waste or dead investment



Metaform



On every page the story of Meta-forms universality is emphasized over and over again.



Metaform



The Metaform patented units might well bear a premium price for the money saving principle they represent—but they are sold to you at a price based on the cost of their simple construction. It is low indeed, compared to your other equipment.



Metaform



Wear, tear, repair and deterioration are items you leave out when considering Metaforms. Their gain is clear "velvet" after one brisk season's work.



Metaform



Metaforms make smooth, handsome jobs — clean cut as they stand after the forms are removed, or ready for any sort of finish specified. There's no comeback or complaint from owner or architect.





Every job put up with Metaforms is a standing advertisement. Their use attracts attention and is convincing evidence of your progressiveness.







